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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/569,811	11/20/2006	Quintino Carvalho	1022702-000296	6554

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EXAMINER

NGUYEN, VU ANH

ART UNIT	PAPER NUMBER
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1796

NOTIFICATION DATE	DELIVERY MODE
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11/14/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

Office Action Summary	Application No. 10/569,811	Applicant(s) CARVALHO ET AL.	
	Examiner Vu Nguyen	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-26 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 12-26 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Objections

1. Claim 13 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The phrase "a suspension" should be changed to "the suspension" for proper dependency.
2. Claim 13 is also objected to because of the following informalities: There should be an "of" between "medium" and "step a)". Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 13-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 13, line 4, the phrase "polycondensing...to the desired degree..." is unclear as no desired degree has been set forth and it is not immediately obvious what polymerization degree is the desired degree.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 12-16, 18, 20, 23, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Mangold et al. (EP 1,186,628 A2).

7. Corresponding to the limitations set forth in these claims, Mangold et al. (Mangold, hereafter) teaches an inorganic filler-containing polyester and a method of preparing thereof. In one embodiment, the amount of the filler in the polyester is 1.4% [0053]. The method comprises mixing the filler with a diol component, adding a diacid, performing esterification reaction, and performing polycondensation reaction [0045]. Since the molar ratio of the diol and the diacid is generally greater than 1 [0045 & 0053], the polyester is inherently a polyesterdiol. The filler includes aluminum-doped silica powder [0038]. The diacid includes terephthalic acid and the diol includes ethylene glycol [0053]. Regarding the limitations in claim 15, adding the filler to the diol is essentially equivalent to adding it to the diacid in the method taught by Mangold because the diacid is in solid form. Consequently, either method of mixing will result in a pre-esterification mixture wherein the solid diacid and the solid filler are dispersed in the liquid diol before any reaction has taken place.

Art Unit: 1796

8. Claims 12-20 and 22-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Fujimoto et al. (US 5,318,833).

9. Corresponding to the limitations set forth in these claims, Fujimoto et al. teaches a suspension comprising a polyester and porous precipitated silica particles. The amount of the particles suspended in the polyester is 0.01-5 wt% (Abstract). Also disclosed is a method of preparing said suspension, wherein "[t]he manner of incorporating the silica particles in polyester in the present invention is not specifically defined...However, it is preferred to add them in the form of a slurry, a dispersion in ethylene glycol for instance, **at any stage** in the preparation of the polyester." (col. 3, lines 63-68). Although the preferred method employed in the prior art is to add the silica particles after the (trans)esterification and before the polycondensation, the prior art clearly includes the methods recited in claims 14 and 15. Since the diol:diacid molar ratio is much greater than 1 (col. 5, lines 49-50), the polyester is inherently a polyesterdiol. The diacid includes iso-phthalic acid, terephthalic acid, naphthenic acid, adipic acid, and sebacic acid, and the diol includes (di)ethylene glycol, propylene glycol, and butanediol (col. 2, lines 23-32).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. Claims 21 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mangold et al. (EP 1,186,628 A2) in view of Takiyama et al. (US 5,198,529).

13. Regarding the limitations set forth in these claims, the method of claim 13 has been shown to be anticipated by Mangold as discussed above. However, Mangold is silent about the molecular weight of the disclosed polyester and fails to teach a polyester comprising unsaturated diacids.

14. Takiyama et al. (Takiyama, hereafter) teaches high molecular weight unsaturated polyester-diol (Abstract) and a method of its preparation, wherein the method comprising a stage of esterification followed by a stage of polymerization (col. 3, lines 33-56). The polyester-diol comprises saturated diacids (or anhydrides) such as phthalic anhydride, isophthalic acid, terephthalic acid; unsaturated diacids (or anhydrides) such as maleic anhydride and fumaric acid; and polyols such as (di)ethylene glycol, (di)propylene glycol (col. 3, lines 1-15). The polyester-diol has an M_n of 5000 or greater (Abstract). Other ingredients such as fillers can be mixed with the polymer (col. 3, lines 57-62). **[Motivations]** Takiyama also teaches that, due to the high molecular weight and the curable nature of the disclosed polyester, it "has improved physical properties in

Art Unit: 1796

comparison with low molecular weight unsaturated polyester resins having a molecular weight of 3,000 or less even if the compositions are the same" (col. 1, lines 56-65) and that the disclosed polyester is suitable for a wide range of applications (col. 1, lines 45-48), including coating materials, lining materials, casting materials, and the like (col. 1, lines 5-18).

15. In light of such benefits, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have combined the method of preparing high molecular weight unsaturated polyester taught by Takiyama with the method of dispersing filler particles in a polyester matrix taught by Mangold so as to obtain a composite material having the filler homogeneously distributed throughout the matrix and having improved physical properties suitable for industrial applications.

16. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mangold et al. (EP 1,186,628 A2) in view of Tsuda et al. (US 5,077,373).

17. Regarding claim 26, the method of claim 13 has been shown to be anticipated by Mangold as set forth above. However, Mangold fails to teach a polyurethane comprising the disclosed filler-containing polyester.

18. Tsuda et al. (Tsuda, hereafter) teaches a polyurethane comprising filler (col. 6, lines 22-23) and, as its structure units, a polyester diol (Abstract). Said polyester diol, having an M_w of 600-5,000 (col. 5, line 59), is prepared from diols that include ethylene glycol and butanediol (col. 4, lines 5-6) and diacids that include adipic acid and sebacic acid (col. 4, lines 26-28). Tsuda also teaches that polyester-based polyurethanes are

Art Unit: 1796

highly applicable in fields that require high mechanical properties and resistances to oil and abrasion (col. 1, lines 28-30) and that conventional polyester-based polyurethanes still lack resistance to heat (col. 1, lines 38-41).

19. In light of such teachings and considering that the method taught by Mangold suppresses agglomeration of filler particles as caused by heat shock, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have employed the filler-containing polyester taught by Mangold in a preparation of a polyurethane as taught by Tsuda so that the filler does not agglomerate when temperature is increased and, consequently, the performance of the polyurethane is not compromised at high temperature.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vu Nguyen whose telephone number is (571)270-5454. The examiner can normally be reached on M-F 7:30-5:00 (Alternating Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1796

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Vu Nguyen
Examiner
Art Unit 1796

/David Wu/
Supervisory Patent Examiner, Art Unit 1796